

**REMARKS**

Entry of the foregoing and reexamination and reconsideration of the subject application, as amended, pursuant to and consistent with 37 C.F.R. § 112, are respectfully requested in light of the following remarks.

Claims 39-51 remain in this application. Claims 1-38 were previously cancelled, without prejudice or disclaimer.

Claim 41 has been amended to delete the presence of a biuretization catalyst in step ii). Claims 50 and 51 have been amended to recite in step i) that the compound comprising at least one function other than an isocyanate function is reactive with the isocyanate function. Support for this amendment is found in the specification at page 22, lines 37-39. Claim 50 has also been amended to recite that the at least one isocyanate dimer contains a urethidinedione unit. Support for this amendment is found in the specification on page 22, lines 29-30.

No new matter has been introduced as a result of the foregoing amendments.

**Objection as new matter under 35 U.S.C. §132(a)**

The Office Action has objected to the amendments filed December 1, 2006 and August 22, 2007 because they introduce new matter into the disclosure. The added material that the Office Action indicates is not supported by the original application is the amendment to the specification at page 20, lines 2-6. The Office Action has required cancellation of this new matter in this Office Action. The Office Action indicates that the original application, PCT/FR98/01800, is not in English and a certified translation of the argued passage has not been provided.

As stated in the response to the previous Office Action, Applicants' had discovered that the translation of the original application PCT/FR98/01800, published as WO 99/07765, to English was not correct in that it did not recite that the ratio of the true dimer units to the total of the isocyanate functions was <30%. While Applicants had submitted a copy of the relevant passage from published application WO 99/07765, a certified translation of the argued passage had not been previously provided. A verified translation of this passage is enclosed to establish that the amended subject matter precisely corresponds to the argued language of the PCT application.

The amended specification literally reads:

"True dimer units total of the isocyanate functions <30%."

The following sentence in the specification recites:

"Advantageously, this ratio is less than 15%, preferably less than 12% (mass/mass)."

These two sentence clearly recite that there is a ratio between true dimer units and the total of the isocyanate functions. While lines 6-7 of the specification do not provide a symbol or the word "to" to properly distinguish the two units being compared, it is clear that the true dimer units are being compared to the total of the isocyanate functions.

Therefore Applicants submit that the amendment to the specification made in the response to the previous Office Action does not contain new matter, as there is basis for the amendment in the original application from which the current application depends.

Applicants request that this objection be withdrawn.

**35 U.S.C. §112, first paragraph rejections**

1. Claims 44-49 have been rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement. The Examiner has indicated that the claim(s) contain subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the invention was filed, had possession of the claimed invention.

Claims 44 and 45 had been amended in the response to the previous Office Action to recite that the weight ratio of true dimer units/total of isocyanate functions is  $\leq 30\%$ . The response to the previous Office Action indicated that support for these amendments is found at least in Examples 4-6 of the specification. Support for the amendment to claims 44 and 45 is also found in the amendment to the specification at page 20, lines 2-6. As discussed above in the section on objection to new matter, a certified translation of the original specification corresponding to the amended specification at page 20, lines 2-6 is provided in Enclosure 1 to establish that the amended subject matter precisely corresponds to the argued language of the PCT application.

Applicants therefore request the withdrawal of the rejection of the claims 44-49 under 35 U.S.C. §112, first paragraph.

2. Claim 41 has been rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement. The Examiner alleges that the claim(s) contain subject matter that was not described in the specification in such a

way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the invention was filed, had possession of the claimed invention.

The Examiner has indicated that adequate support has not been provided for the amendment pertaining to "a biuretization catalyst". The Examiner has indicated that the applicants have not established that the disclosed (cyclo)trimerization or (cyclo)condensation catalysts correspond to or encompass the claimed biuretization catalyst.

Claim 41 has been amended to delete the presence of a biuretization catalyst in step ii).

Applicants therefore request the withdrawal of the rejection of the claim 41 under 35 U.S.C. §112, first paragraph.

3. Claim 50 has been rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement. The Examiner alleges that the claim(s) contain subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the invention was filed, had possession of the claimed invention.

The Examiner has indicated that adequate support has not been provided for component (a), at least one isocyanate dimer containing an isocyanurate unit.

Claim 50 has been amended to recite that the low-viscosity polyfunctional isocyanate composition contains (a) at least one isocyanate dimer containing a urethidinedione unit and have provided specific support in the specification for this amendment.

Applicants therefore request the withdrawal of the rejection of the claim 50 under 35 U.S.C. §112, first paragraph.

**35 U.S.C. §112, second paragraph rejection**

Claims 44-49 have been rejected under 35 U.S.C. §112, second paragraph as failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

The Office Action indicates that it remains unclear if the language "isocyanate functions" refers to isocyanate groups or isocyanate monomers.

The language "isocyanate function" refers to an isocyanate functional group, not to isocyanate monomers. The term "function" in the specification is synonymous with the term "functional group." This can be seen from lines 1-5 of page 13, which states:

The compounds of general formula I and/or II and/or III are used in an effective amount for ensuring stabilizing activity, and preferably with a ratio: isocyanate functions/hydroxyl functions, of greater than 4, preferably greater than 20.

The term "function" is also used throughout the specification to indicate functional groups. One of ordinary skill in the art, upon reading the specification, would understand that the term "isocyanate function" refers to an isocyanate functional group, not to isocyanate monomers. Therefore claims 44-49 are not indefinite because the disclosure particularly points out and distinctly claim the subject matter which the applicant regards as the invention as required by 35 U.S.C. 112, second paragraph.

Applicants therefore request the withdrawal of the rejection of the claims 44-49 under 35 U.S.C. §112, second paragraph.

**35 U.S.C. §112, second paragraph rejection**

Claims 39, 40, 42, 43, 50 and 51 have been rejected under 35 U.S.C. §112, second paragraph as being incomplete for omitting essential steps.

The Office Action indicates that for claims 39, 40, 42 and 43, the omitted steps pertain to how the claimed biuret unit is obtained absent a step of producing the biuret trimer reaction product.

Applicants respectfully submit that the claims contain a step of producing the biuret trimer reaction product. Step ii) in the claims recites reacting the reaction product from step i), which contains isocyanate dimer and unreacted monomers, in the presence of a (cyclo)trimerization catalyst, under (cyclo)trimerization conditions to obtain an isocyanurate trimer reaction product. The isocyanurate trimer reaction product contains the biuret trimer reaction product. This is taught in the specification on page 18, lines 25-37.

For claim 50, the omitted steps pertain to how to obtain the claimed isocyanurate unit from a starting reaction medium that only contains an isocyanate monomer. The claimed process steps fail to allow for the production of the claimed isocyanurate unit.

Applicants respectfully submit that claim 50 does not have a starting reaction medium that only contains an isocyanate monomer. Rather claim 50 recites "a starting reaction medium containing at least one isocyanate monomer, in which the isocyanate groups are borne by  $sp^3$  carbon atoms, and another compound comprising at least one function other than isocyanate, wherein the compound comprising at least one function other than isocyanate is reactive with isocyanate

functions." Therefore the claimed method contains the essential steps required for the method.

For claim 51, the omitted steps pertain to how to obtain the claimed isocyanurate units or biuret units.

Applicants respectfully submit that claim 51 contains a step of producing the claimed isocyanurate units or biuret units. Step ii) in the claims recites reacting the reaction product from step i), which contains isocyanate dimer and unreacted monomers, in the presence of a (cyclo)trimerization catalyst, under (cyclo)trimerization conditions to obtain an isocyanurate trimer reaction product. The isocyanurate trimer reaction product contains claimed isocyanurate units or biuret units. This is taught in the specification on page 18, lines 25-37.

Applicants therefore request the withdrawal of the rejection of the claims 39, 40, 42, 53, 50 and 51 under 35 U.S.C. §112, second paragraph.

**35 U.S.C. §112, first paragraph rejection**

Claims 50 and 51 have been rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement.

The Office Action indicates that there is not adequate written description for the production of isocyanurate groups or biuret groups by simply reacting an isocyanate monomer with a compound comprising a function other than an isocyanate function.

Claims 50 and 51 have been amended to recite that step i) involves reacting the isocyanate monomers with a compound comprising at least one function other than an isocyanate function, which is reactive with the isocyanate function. Claims 50 and 51 particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

Applicants therefore request the withdrawal of the rejection of the claims 50 and 51 under 35 U.S.C. §112, first paragraph.

**35 U.S.C. §112, second paragraph rejection**

Claims 50 and 51 have been rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

The Office Action indicates that it is unclear if the compound comprising "at least one function other than an isocyanate function" is required to be an isocyanate reactive function.

Claims 50 and 51 have been amended to recite that step i) involves reacting the isocyanate monomers with a compound comprising at least one function other than an isocyanate function, which is reactive with the isocyanate function. Claims 50 and 51 particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

Applicants therefore request the withdrawal of the rejection of the claims 50 and 51 under 35 U.S.C. §112, second paragraph.

Applicants respectfully submit that all of the claims now in the application are in position for allowance.

Respectfully submitted,

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Enclosure: (1) page 18 of WO 99/07765 along with verified translation

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fonctionnalité supérieure à deux et un dimère isocyanate à cycle uretidine dione, possédant au moins deux fonctions isocyanates, ce dernier étant obtenu par une réaction thermique en l'absence de catalyseur spécifique de dimérisation, éventuellement en présence d'un composé de formule générale I, II et/ou III.

5 Dans les compositions de l'invention, on constate par ailleurs que la quantité de dimère formé est en équilibre avec les autres molécules polyisocyanates de la composition. La composition isocyanate est donc stable au cours du temps et ne nécessite pas de rectification régulière pour éliminer les monomères qui seraient formés par dissociation du dimère.

10 En particulier, la stabilité est d'autant meilleure que les conditions suivantes sont respectées pour la composition :

- motifs dimères vrais total des fonctions isocyanates  $\leq 30\%$

Avantageusement ce rapport est inférieur à 15 %, de préférence inférieur à 12 % (masse/masse).

15 Il est de préférence supérieur à 3,5 %, avantageusement 5 % dans le cas des isocyanurates.

Les dimères vrais sont les composés de formule générale X ci-dessus.

20 L'intérêt des procédés de préparation de compositions d'isocyanates polyfonctionnels de l'invention réside également en ce qu'ils ne nécessitent qu'une seule opération d'élimination des monomères de départ, pour obtenir une composition d'isocyanates polyfonctionnels de basse viscosité.

25 Un autre avantage du procédé de l'invention est qu'il permet d'augmenter le taux de transformation des monomères pour des viscosités relativement faibles.

De manière typique, pour un taux de transformation de 53%, la viscosité d'une composition comprenant 37 % de trimères vrais d'HDI (à un seul cycle isocyanurate) et 6,6% de dimères vrais (à un seul cycle urétidinedione) d'HDI est de 4694 mPa.s à 25°C, avec une fonctionnalité moyenne de 3,7.

30 Le procédé selon l'invention permet d'obtenir des produits de plus haute fonctionnalité avec des taux de transformation des monomères élevés tout en gardant des viscosités réduites.